ON THE MOULT, BREEDING SEASON AND DISTINCTIVENESS OF SOUTHERN AFRICAN AVOCETS *RECURVIROSTRA AVOSETTA* (AVES, CHARADRII)

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(With 1 figure and 2 tables)

[*MS accepted 14 July 1995*]

ABSTRACT

Evidence was sought for the occurrence of Palearctic-bred black-crowned avocets, *Recurvirostra avosetta* Linnaeus, in southern Africa, primarily through time of moult of the primaries. No specimen of even probable Palearctic origin was found in South African collections. There is no reason to believe that Palearctic birds regularly come south of Lake Turkana in northern Kenya. Active moult has been noted between August and March. Breeding may take place at any time in southern Africa but July to October are the principal egg-laying months. Breeding is widespread but highly opportunistic in dry areas. Many pairs breed solitarily, small colonies are not rare, but colonies in excess of 100 pairs are known only from the Etosha National Park, Namibia. Iris colour of adults does not serve to distinguish southern African-bred birds from Palearctic ones. Southern African birds are shorter winged than Palearctic birds but probably have greater mass. There is no sexual dimorphism in linear measurements, as there is in Palearctic birds.

CONTENTS

INTRODUCTION

Whether or not Palearctic-bred black-crowned avocets *Recurvirostra avosetta* Linnaeus (see synonymy in Appendix 1) reach southern Africa is disputed on *a priori* grounds in the absence of data. For instance, among recent workers, Clancey (1980: 75) says 'Perhaps mainly visitor from Palearctic'; Maclean (1985: 261) says 'some birds resident and nomadic; others possibly nonbreeding Palearctic migrants'; Urban (1986: 196) says 'southern African populations probably Afrotropical in origin', a view that Pinto (1983) takes in respect of Angolan birds.

Following the approach of Brooke & Herroelen (1988) on distinguishing Afrotropical and Palearctic populations of the European bee-eater *Merops*

Ann. S. Afr. Mus. **104** (12), 1996: 395–404, 1 fig, 2 tables.

apiaster Linnaeus, I thought it possible that a study of the timing of the post-breeding moult of the primary wing feathers of specimens might elucidate the problem of whether Palearctic-bred *R. avosetta* reach southern Africa on migration. Palearctic birds lay eggs chiefly between April and June (Cramp & Simmons 1983) and southern African ones chiefly between August and November (Maclean 1985).

METHODS

Specimens from the natural history museums listed in Acknowledgements were borrowed and examined at the South African Museum, along with that institution's collection. Southern Africa provided 26 specimens: the three Cape Provinces 7, Namibia 17, KwaZulu–Natal 2; western Europe 7 specimens. Breeding localities are given in Appendix 2.

MOULT OF THE PRIMARIES

The moult of the primaries in southern African *R. avosetta* is descendant, and either symmetrical or close to it. Interrupted moult occurs in four of the adult specimens examined, presumably to facilitate opportunistic breeding in semi-arid and arid areas: two of these specimens are labelled as having gonads in full breeding condition. Four specimens show evidence of wave moult or, perhaps, resumption of moult at a point other than where it was interrupted.

Active moult was found in some southern African birds taken in August, November, December, February, and March. Others taken between November and February are in worn plumage, not fresh. In Palearctic birds, moult occurs chiefly from July to September (Cramp & Simmons 1983). Since Palearctic birds reach Morocco only in late August and would not reach Subsaharan Africa until, probably, October (Cramp & Simmons 1983), I conclude that if Palearctic birds occur in southern Africa, they do so in small numbers and have not been among the specimens examined. They would be in fresh plumage at a time when most southern African-bred birds were moulting their primaries or were in worn plumage.

BREEDING SEASON AND DISTRIBUTION

It is clear from Table 1 that August is the principal month in which southern African *R. avosetta* lay eggs, both in the winter rainfall south-western Cape and in the summer rainfall areas. However, far more than in the south-western Cape, opportunistic laying occurs in the semi-desert Karoo and regions to the north when conditions are suitable (e.g. Winterbottom & Rowan 1962). The November to May breeding records are examples of this. For instance, on 27 March 1989 I found a pair of avocets with two downy young on a farm dam (Boomrivier) in Bushmanland between Pofadder and Kenhardt, where the grandson of the owner told me that the dam had last held water in 1976.

Southern African *R. avosetta* are not obligate colonial breeders. Judging by the Southern African Ornithological Society (SAOS) nest record cards, the majority breed in small colonies of fewer than a dozen pairs and solitary

breeding is not rare: I have only seen one colony, and that a small one. However, in the Etosha National Park, Namibia, large colonies with well over 100 breeding pairs may be found, at least in some years (Namibian nest record card collection). These records were not used for breeding season analysis (Table 1) since they would swamp the data from single pairs and small colonies found elsewhere. 'Intensive recording of a few colonies [in one area] is a major source of bias in the patterns of these species' (Benson *et al.* 1964: 31).

TABLE 1

Southern African breeding records of *Recurvirostra avosetta* backdated to the months in which the eggs were certainly or probably laid.

J	A	S	O	N	D	J	F	M	A	M	J
South-western Cape (predominantly winter rainfall)											
4	68	50	14	1	—	—	—	1	1	—	4
Outside the south-western Cape (predominantly summer rainfall)											
15	26	7	12	5	7	3	1	5	10	3	4

Sources: Southern African Ornithological Society nest record card collection, the Namibian nest record card collection other than those for the Etosha National Park, W. R. J. Dean's nest record card collection, Sandberg (1908), Wyndham (1942), Vincent (1945), Broekhuysen & MacLeod (1948), MacLeod *et al.* (1951), Farkas (1962), Winterbottom & Rowan (1962), Robson & Sinclair (1976), Berruti (1980), Anon. (1981), MacCallum (1985), MacCallum & MacCallum (1985), Tarboton *et al.* (1987), Williams (1989), Tree (1992*b*), Skinner (1993), and personal records.

Breeding localities obtained from the literature, nest record card collections and personal observations are listed in Appendix 2 and mapped in Figure 1. It must be understood that in most cases opportunistic breeding takes place at these sites only when suitable waters are available. There is no fixed breeding range as in some species. Despite Pinto's (1983) doubts, *R. avosetta* probably also breeds at times in semi-arid south-western Angola.

MEASUREMENTS

Roberts (1932) pointed out that southern African *R. avosetta* were shorter winged than those of the Palearctic (214–222 mm vs 220–235 mm). This point does not seem to have been followed up. Measurements of specimens examined are presented in Table 2 from which it appears that the point is well made. Culmen lengths in both sexes are equivalent to those of females in western Europe given by Roselaar *in* Cramp & Simmons (1983). Tarsus lengths in both sexes are intermediate between those of males and females in western Europe (Cramp & Simmons 1983). Southern African birds do not show the sexual dimorphism in these characters shown by Palearctic birds.

Urban's (1986) mass data for *R. avosetta* are confused. The figures for 15 southern African birds ranging between 270 and 390 g are entered twice. Four females from Botswana are stated to weigh 202–217 g. These are the wing lengths given by Ginn (1976) for four females, and not weights at all.

Present knowledge of mass data shows that southern African birds appear to be heavier than east African or Palearctic birds, though the difference is not

significant. For southern Africa, Summers & Waltner (1979) gave 270–390 g, av. (15) 318.7 g (used by Maclean 1985 and Urban 1986). SAFRING's mass data file gives 274.5–366 g, av. (13) 326.9 g. Setting aside the females from Botswana mentioned above, Urban (1986) gave the masses of two males from Botswana as 375.8 and 385.9 g: these figures come from Ginn (1976). Ginn (1976) added for females 311.1–348.1 g, av. (6) 324 g.

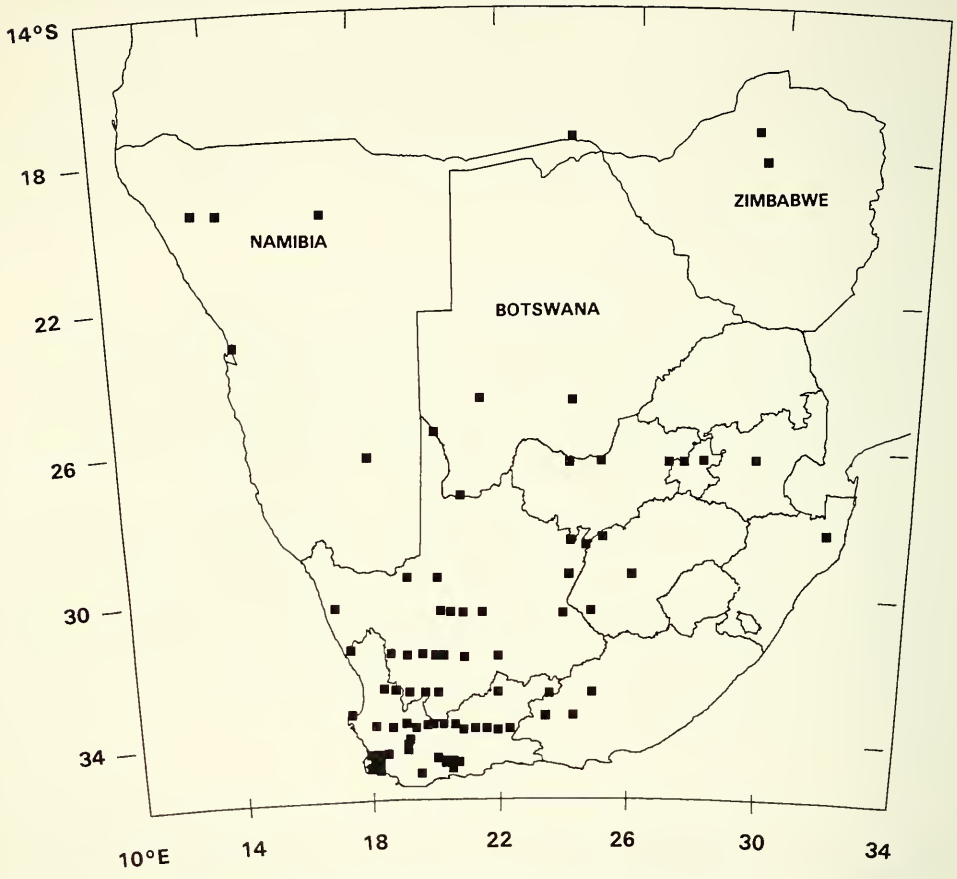

Fig. 1. Map showing southern African localities where *Recurvirostra avosetta* has bred (listed in Appendix 2).

For east Africa, Britton (1970) gave 225–305 g, av. (5) 266 g for unsexed birds, 270 g for one female and 285 g for one male. Urban (1986) added 195–265 g for 15 unsexed birds and SAFRING's mass data file 225–310 g, av. (10) 274.8 g, s.d. 25.39. Masses of adult Palearctic birds given by Roselaar in Cramp & Simmons (1983) range 219–435 g, av. (42) 298.2 g. It appears that the shorter wing length of southern African birds is not reflected in a lower mass than in Palearctic birds, allowing for the larger sample of Palearctic birds. Southern African birds may actually be even heavier on average than Palearctic birds.

TABLE 2

Standard measurements of adult southern African *R. avosetta* compared with those of the western Palearctic in Cramp & Simmons (1983). n = sample size; s.d. = standard deviation; * = significant at the 95 per cent level.

	Southern Africa						Western Palearctic					
	Males			Females			Males			Females		
Measurement	n	Range	Mean ± s.d.	n	Range	Mean ± s.d.	n	Range	Mean ± s.d.	n	Range	Mean ± s.d.
Wing (mm)	7	210–225	218.7 ± 4.99*	12	207–220	216.2 ± 4.76*	10	220–230	226.0 ± 3.50*	20	219–231	225.0 ± 4.00*
Culmen (mm)	3	74.7–83.4	80.3	8	76.8–88.1	82.0 ± 4.07*	10	82–91	86.1 ± 2.47	28	72–85	78.3 ± 4.05*
Tarsus (mm)	7	81.6–90.2	85.6 ± 3.01*	13	73.6–91.3	85.4 ± 5.02*	17	85–94	88.9 ± 2.63*	24	77–86	82.4 ± 2.68*
Mass (unsexed) (g)												
SAFRING	13	274–366	326.9 ± 29.5				42	219–435	298.2 ± 52.0			
Summers & Waltner (1979)	15	270–390	318.7 ± 32.6									
Mass (sexed) (g)												
Ginn (1976)	2	376–386		6	311–348	324						

IRIS AND PLUMAGE COLOURS

Tree (1992*a*) has recently pointed out that all the adult southern African *R. avosetta* he has handled have had red irides, not brown as in Palearctic birds (Cramp & Simmons 1983). This observation is supported by some published colour photographs: Newman (1979: 99), Frandsen (1982: 98), Ginn (1989: 256), Hockey (1991: 53), but not by Nichol's breeding bird (1971: 71) and Sinclair (1984: 117), both of which have brown irides. An examination of the FitzPatrick Institute's slide collection revealed 38 slides showing a red iris and 24 showing a brown one. Some of the birds with brown irides may well have been immatures, as stated by Tree (1992*a*). Seven were sitting on nests. From details of the background, it is clear that in several cases multiple slides were taken of particular individuals, and that it would not be warranted to claim that seven separate birds with brown irides were photographed on the nest in the Western Cape Province. To reduce the number of brown-eyed adults still further, at least one shows a red iris in some slides. It is clear that the majority of southern African adult *R. avosetta* have red irides.

However, the iris colour of Palearctic birds seems to have been markedly over-simplified by Cramp & Simmons (1983). In the primary literature, Hartert (1921) stated that the iris colour is dark red-brown to nut-brown, but does not mention a sex linkage. Meinertzhagen (1943) and Glutz von Blotzheim *et al.* (1977) stated that males have red or red-brown irides and females hazel irides. Hayman *et al.* (1986) stated that the colour is brown, but their illustration shows a bird with a red-brown iris. It appears that iris colour is not a practical means of separating Palearctic and southern African *R. avosetta*.

There is some tendency for southern African birds to have more melanin, or lesser areas of white, in the inner primaries than in Palearctic birds. But again, the character is not absolute and cannot by itself be used to distinguish Palearctic and southern African-bred *R. avosetta*.

CONSERVATION

The mensural data presented above and in Table 2, support the view that southern African breeding *R. avosetta* do not form part of the population that breeds in the Palearctic. That Palearctic birds do reach Subsaharan Africa is shown by a ringing recovery from Senegal (Glutz von Blotzheim *et al.* 1977). In addition, the great flocks seen locally in west Africa during the northern winter, summarized in Urban (1986), are almost certainly Palearctic birds in their winter quarters. Britton (1980) considered the regular occurrence of Palearctic birds to be doubtful in East Africa south of Lake Turkana. This seems a correct appreciation and is supported by Dowsett (1978), Cramp & Simmons (1983) and Urban (1986).

It has been shown above that southern African breeding black-crowned avocets *R. avosetta* are a distinct biological entity. Some consideration should therefore be given to the need for conservation of southern African breeding birds. Drainage and alteration of wetlands has deprived them of some breeding sites, as on the Cape Flats where the sites mentioned by Wyndham (1942), Broekhuysen & MacLeod (1948) and MacLeod *et al.* (1951) have almost

entirely been drained and built over. But the species readily breeds at man-made waterbodies when conditions are suitable. Because it is predominantly an inhabitant of drier areas, it breeds opportunistically, and unpredictably, at temporarily suitable sites. Temporarily suitable sites may dry up before the young have fledged. They are then subject to mammalian predation. This could be mitigated by adding water to such sites, but in semi-arid areas such water is not normally available.

Active management on behalf of *R. avosetta* does not seem to be needed in the absence of widespread threats to its well-being as a breeding species. Furthermore, it is exceedingly difficult to institute proactive conservation for a species without a fixed breeding range.

ACKNOWLEDGEMENTS

I am obliged to the directors and ornithologists of the Durban Natural Science Museum, the East London Museum, the South African Museum, Cape Town, the State Museum, Windhoek, the Transvaal Museum, Pretoria, and the Institute of Taxonomic Zoology, Amsterdam, for access to or the loan of specimens. I am obliged to Dr T. B. Oatley, officer in charge of SAFRING, for mass data and for the loan of SAOS nest record cards; to Mr J. A. Harrison, officer in charge of SABAP, for a list of breeding localities in the atlas data as at the end of 1990; to Dr C. J. Brown for photocopies of Namibian nest record cards; to Mr W. R. J. Dean for photocopies of his nest record cards; and to Dr D. W. Snow for highly pertinent comments on an earlier version of this work.

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APPENDIX 1

Synonymy of *Recurvirostra avosetta* Linnaeus based primarily on Seebohm (1887), Sharpe (1896), Reichenow (1900) and Hartert (1921).

Recurvirostra Linnaeus, 1758: 151. Type by monotypy *Recurvirostra avosetta* Linnaeus.
Scolopax Linnaeus, 1758: 145. Type by tautonomy *Scolopax rusticola* Linnaeus.
Avocetta Brisson, 1760: 538. Type by virtual tautonomy *Recurvirostra avosetta* Linnaeus.
Himantopus Brisson, 1760: 46. Type by tautonomy *Charadrius himantopus* Linnaeus.

Recurvirostra avosetta Linnaeus, 1758: 151. Öland, Sweden.
Scolopax avocetta Scopoli, 1769: 92. Europe.
Avocetta recurvirostra Boddaert, 1783: 21. A typographical transposition of Linnaeus's name whose reference number is correctly given; probably not a use of Brisson's generic name.
Avocetta europaea Dumont, 1816: 339. *Nom. nov. pro R. avosetta* Linnaeus.
Recurvirostra tephroleuca Vieillot, 1820: 360. Senegal. Based on an immature or partly leucistic specimen.
Recurvirostra fissipes C. L. Brehm, 1831: 686. Pomeranian coast of Germany.
Recurvirostra helebi A. E. Brehm, 1854: 84. Egypt.
Recurvirostra helevi A. E. Brehm, 1855: 326. Invalid correction of *R. helebi* A. E. Brehm.
Recurvirostra avosetta natans A. E. Brehm, 1866. *Nomen nudum.*
Recurvirostra sinensis Swinhoe, 1867: 401. Amoy (= Xiamen), China.
Himantopus avocetta Seebohm, 1885: 74. Europe.

APPENDIX 2

Localities at which *Recurvirostra avosetta* have been recorded breeding in southern Africa based on the Southern African Ornithological Society's nest record card collection (including author's records), the Namibian nest record card collection, the Dean nest record card collection, Southern African Bird Atlas Project (SABAP) up to the end of 1990, and literature cited.

Western Cape Province: Rimmerskraal (Bredasdorp), Springfield Estates (Bredasdorp), Alderman's Farm (Somerset West), Eerste River estuary (Somerset West), Faure (Stellenbosch), Swartklip and other pans on the Cape Flats (Wyndham 1942; Broekhuysen & MacLeod 1948; MacLeod *et al.* 1951), Strandfontein Sewage Works (Cape Flats), Rietvlei (Milnerton), Bloubergstrand, Vissershok (Bellville), Occultdale (Durbanville), Melkbosstrand, Duinefontein (Melkbosstrand), between Darling and Yzerfontein, Yzerfontein, Saldanha, Langebaanweg, Gansefontein (Hopefield), between Langebaanweg and Vredenburg, Velddrif (Layard & Sharpe 1884), Piketberg, Wadrifsoutpan, Barrydale, Ladismith, Prince Albert, Nieuweveld Mnts (north of Beaufort West), Saucyskuil (south-east of Beaufort West), Uniondale.

Eastern Cape Province: Aberdeen, Cradock (Skead 1967).

Northern Cape Province: Rietfontein Salt Works (coast of southern Namaqualand) (SAM), Garies, Colesberg (Layard & Sharpe 1884), Groblershoop, 25 km north of Loxton, Rooipoort (Middelpos), Calvinia, Kootjieskolk, between Williston and Carnarvon, between Nieuwouldtville and Loeriesfontein, between Loeriesfontein and Kenhardt, Commissioner's Pan, Brandvlei, Boomrivier (between Kenhardt and Pofadder), between Pofadder and Aggeneys, Brandvlei, De Aar, between Kimberley and Griekwastad, Barkly West.

Orange Free State Province: Luckoff, Sophiasdal (Bloemfontein), Bultfontein.

KwaZulu-Natal Province: Lake St Lucia (Robson & Sinclair 1976; Berruti 1980).

Eastern Transvaal Province: Near Amersfoort (Tarboton *et al.* 1987).

Gauteng Province: Rondebult (Johannesburg) (Tarboton *et al.* 1987), Blesbok Spruit (Springs), Nooitgedacht (Nigel).

North-west Province: Vryburg, Barberspan (Farkas 1962).

Botswana: Kgoro Pan (Skinner 1993), Tshane Pan (Anon. 1981).

Namibia: Ausisfontein, Hoanib Salt Pan, Klein Oase by Hoarisib River (all three in Skeleton Coast Park), Swakopmund, Walvis Bay, Neute Dam (Keetmanshoop), Damaraland (Andersson & Gurney 1872), Halali (Etosha National Park).

Zambia: Zambezi River (Barotseland) (Sandberg 1908).

Zimbabwe: Darwendale Dam (MacCallum 1985; MacCallum & MacCallum 1985), Chegutu (Williams 1989; Tree 1992*b*).